



**Internal Operating Procedure**  
ISO 9001:2015 SOC NEVADA LLC

DOCUMENT No.  
FES.IOP.FST.0015

TITLE:

REV. 6

SAI GLOBAL  
ISO 9001  
Quality

**TESTING, INSPECTION & MAINTENANCE OF CO<sub>2</sub>  
FIRE SUPPRESSION SYSTEM 110 Hg STORAGE**

PAGE 1 OF 7

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APPROVAL SIGNATURES			
PREPARED/REVIEWED BY <i>Christina Holloway</i>	CHRISTINA HOLLOWAY, EXECUTIVE ASSISTANT BASE OPERATIONS	DATE 3-14-18	
APPROVED BY <i>Tim Rutherford</i>	TIM RUTHERFORD, CHIEF FIRE & EMERGENCY SERVICES	DATE 3/12/18	
APPROVED BY <i>Jorge Jensen</i>	JORGE JENSON, FIRE INSPECTOR	DATE 3-8-18	
APPROVED BY <i>Burton Packard</i>	BURTON PACKARD, DIRECTOR BASE OPERATIONS	DATE 3/12/18	
<input type="checkbox"/> INITIAL RELEASE <input type="checkbox"/> ANNUAL REVIEW, NO REVISION REQUIRED <input checked="" type="checkbox"/> ANNUAL REVIEW, REVISION REQUIRED (SEE HISTORY BELOW)			

REVISION HISTORY			
REV	CHANGE DESCRIPTION	AUTHOR	DATE
6	ANNUAL REVIEW: UPDATED SIGNATORY AUTHORITY TO REFLECT CURRENT REQUIRED SIGNATURES. CHANGED DOCUMENT TO ISO9001:2015 FORMAT.	CHRISTINA HOLLOWAY	03/2018
5	ANNUAL REVIEW, UPDATED SIGNATORY AUTHORITY TO REFLECT CURRENT REQUIRED SIGNATURES.	CHRISTINA HOLLOWAY	05/2017
4	Updated signatory authority to reflect current required signatures.	Karli Wilbur	05/2016

REFERENCE DOCUMENTS	
DOCUMENT NUMBER	DOCUMENT TITLE
NFPA 12	Standard on Carbon Dioxide Extinguishing Systems
NFPA 72	National Fire Alarm Code
S/N 30000038	CHEMETRON FIRE SYSTEMS OPERATION & MAINTENANCE MANUAL ISSUED 7/15/1998 REV. C-1 07/24/2007 p. 31-34.
DPD.IOP.FES.0016	Fire Alarm Test Procedure
SOC.OHS.SP.0002	LOCKOUT/TAGOUT
N/A	Maximo
DPD. IOP.FES.0019	Mercury Monitoring & Response
S/N 30000016	CHEMETRON FIRE SYSTEMS INSPECTION & MAINTENANCE
QP.QMS.0002	Control of Quality Records

**DOCUMENTS REFERENCED IN THIS PROCEDURE ARE APPLICABLE TO THE EXTENT SPECIFIED HEREIN.**

**THIS DOCUMENT WILL BE REVIEWED AT LEAST ANNUALLY TO ENSURE ITS SUITABILITY**



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**1. PURPOSE**

- 1.1 This procedure is intended to specify the importance of testing, inspecting and maintaining CO<sub>2</sub> fire suppression systems for the mercury storage facilities in the 110 area on a weekly, monthly and annual basis.

**2. SCOPE**

- 2.1 Prior to any testing, inspection and/or maintenance, all pre-entry procedures of DPD.IOP.FES.0019 must be followed.
- 2.2 This procedure provides the minimum requirements for test, inspection and maintenance action steps for low pressure carbon dioxide fire suppression systems.
- 2.3 Requirements provide safe testing procedures and will provide accurate data to keep records IAW NFPA 12.
- 2.4 The entire CO<sub>2</sub> fire suppression system is monitored 24 hours a day by a radio alarm system at the GOC, and all alarms transmitted initiate a dispatch of Fire Personnel for investigation, corrective action, or any other interventions required to return system to SAFE mode and placed back into service.
- 2.5 Safe inspection, testing and maintenance will include the use of eye protection, ear plugs and mechanic or leather gloves.
- 2.6 A step ladder and fall protection shall be used when accessing overhead valves.
- 2.7 All maintenance shall be preceded by implementation of SOC Lock-Out Tag-Out procedure SOC.OHS.SP.0002.
- 2.8 Keys to unlock Micro 1 EV panel, discharge valve, pilot valve, fill valve or vent valve will be secured IAW Fire Department Key Program.
- 2.9 Equipment used for testing includes IR gun, magnet for smoke and heat detector testing and various hand tools.

**3. DEFINITIONS AND ACRONYMS**

- 3.1 AFP – Alarm Fire Panel
- 3.2 CO<sub>2</sub> – Carbon Dioxide
- 3.3 GOC – Guard Operation Center
- 3.4 Hg – Periodic Table of Elements identification symbol for mercury
- 3.5 HR – Human Resources
- 3.6 IAW – In Accordance With
- 3.7 IOP – Internal Operating Procedure
- 3.8 IR – Infrared
- 3.9 LOTO – Lockout/Tagout
- 3.10 Micro 1 EV- Control Panel for CO<sub>2</sub> system
- 3.11 Maximo – Computerized Maintenance Management System
- 3.12 NFPA - National Fire Protection Association
- 3.13 PSIG – pounds per square inch gauge
- 3.14 Trouble Call – Number called (945-7098) to have discrepancies fixed

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#### 4. FLOWCHART

4.1 No flowchart needed.

#### 5. RESPONSIBILITIES

- 5.1 Fire Inspectors are responsible for testing, inspecting and maintaining CO<sub>2</sub> fire suppression system at 110 Hg storage facilities. Scheduling is through Maximo.
- 5.2 Prior to any testing, inspection, maintenance or operation of CO<sub>2</sub> fire suppression system, all personnel will be trained by the Chief Fire Inspector.
- 5.3 All personnel conducting operations of any kind inside the mercury storage buildings in the 110 area will receive fire safety training which includes emergency procedures regarding the activation of the CO<sub>2</sub> fire suppression system. All training will be documented with trainee's name and signature on a "Class Attendance Sign In Sheet" and turned in to HR.
- 5.4 All fire officers are responsible for following procedures in the event of system activation, trouble or fault codes.
- 5.5 In the event the fire alarm system and CO<sub>2</sub> suppression system is out of service a security guard will be requested to stand by for fire watch until system is placed back in service.
- 5.6 During all testing, inspection and maintenance, a minimum of two fire personnel will be present.
- 5.7 Any testing or maintenance that could allow ANY movement of CO<sub>2</sub> will be conducted IAW SOC Procedure SOC.OHS.SP.0002 Lock-Out Tag-Out.
- 5.8 The Fire Department will allow manual control rather than automatic control of the CO<sub>2</sub> system during maintenance. The CO<sub>2</sub> system will be returned to service only after the maintenance has been completed.

#### 6. PROCEDURE

- 6.1 Valve Matrix
  - Tags are applied to each valve and numbered for easy identification
  - 1 – Janesbury Ball Valve
  - 2 – Pilot Valve
  - 3 – Cardox Plunger
  - 4 – Pilot Line Valve
  - 5 – Main Discharge Valve
  - 6 – Vent Return Valve
  - 7 – Fill Line Valve
  - 8 – Safety Relief Vents

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6. PROCEDURE (CONTINUED)

6.2 Weekly

CO <sub>2</sub> FIRE SUPPRESSION SYSTEM WEEKLY INSPECTION				
DATE				
INSPECTOR				
Liquid level is above 7/10				
Tank pressure is 290-310 psig				
Power is provided to Micro 1 EV				
Micro 1 EV reads SAFE				
Green light on panel door is lit				
Pilot line valve open & locked (4)				
Main discharge line open & locked (5)				
No leaks or ice buildup are observed				
No audible or visual alarms				
Bollards are free of damage				
Tank, pipes and valves are free of damage.				
Tank fill and vent lines are closed & locked (6&7)				
ANY NONCOMPLIANCE - NOTIFY TROUBLE CALL DESK				

**Note: Any deviation of the CO<sub>2</sub> liquid level below 7/10 will require a trouble call placed to initiate a refill of CO<sub>2</sub> tank. Consequence of CO<sub>2</sub> liquid level below 7/10 could result in inadequate suppression of fire.**

**Note: Any deviation of the tank pressure above 340 psig will result in the CO<sub>2</sub> discharging from the relief valve. The system self-refrigerates itself but would eventually relieve to a level that would be inadequate to suppress a fire. If this occurs the Fire Dept is notified by GOC that there is a trouble with the system and is dispatched to the affected system to investigate and initiate a trouble call to correct problem.**



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6. PROCEDURE (CONTINUED)

6.3 Monthly

CO <sub>2</sub> FIRE SUPPRESSION SYSTEM MONTHLY INSPECTION				
DATE				
INSPECTOR				
Fulfill weekly inspection criteria				
Notify GOC of building entry				
Smoke & heat detectors have power				
Emergency lighting and EXIT lights are functional				
Mini IR3 flashes green light				
AFP reads NORMAL				
Pull stations are free from obstructions				
Key switches are functional, unobstructed and enabled				
Doors secure and Micro 1 EV resets to SAFE				
ANY NONCOMPLIANCE - NOTIFY TROUBLE CALL DESK				



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**6. PROCEDURE (CONTINUED)**

6.4 Annually

<b>CO<sub>2</sub> FIRE SUPPRESSION SYSTEM ANNUAL INSPECTION</b>	
<b>DATE</b>	
<b>INSPECTOR</b>	
Notify GOC of building entry & testing	
Fulfill weekly and monthly criteria	
Close main discharge valve at selector switch (5) LOTO applies in closed position	
Disconnect green selector valve from Micro 1 EV	
Open and close each door and listen for solenoid	
Disable and Enable key and listen for solenoid	
Test any detector to verify pre-alarm - Indicated by solo alarm and strobe above AFP	
Place AFP in walkthrough mode IAW DPD.IOP.FES.0016 6.6	
Test remaining detectors (smoke, heat, & IR)	
Press BACK ARROW until out of walkthrough, silence AFP, reset Micro 1 EV and reset AFP	
Set yellow wire nut inside the threaded nipple that the green selector line was attached to at the top of Micro 1 EV panel.	
Set off two detectors and verify full alarm by all horns and strobes activated	
While exiting the building, turn key switches to Enable and secure doors	
Verify pneumatic alarm siren starts when door is shut	
Alarm on Micro 1 EV will sound 2:40 to 3:15 minutes before CO <sub>2</sub> dump occurs	
After 2:40-3:15, system dump is simulated by yellow wire nut popping out	
Open door on west end and verify pneumatic alarm shuts down	
Wait for Micro 1 EV panel to finish countdown and reads rch09	
Silence AFP	
Push up Cardox Plunger (3)	
Reset AFP	
Reset Micro 1 EV to SAFE mode	
If Hg is in building, open discharge line back to open position and lock	
Reconnect green selector line using pipe dope	
Verify GOC has pressed ACK (acknowledge) and End Call on Vision 21	
<b>ANY NONCOMPLIANCE - NOTIFY TROUBLE CALL DESK</b>	



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7. METRICS

7.1 Record results on forms on applicable forms IAW NFPA 12 and 72. Compare results with last year to ensure system integrity.

8. QUALITY RECORDS

8.1 The following Quality Records shall be generated and managed in accordance with SOC.QP.QMS.0002

QUALITY RECORDS			
RECORD REQUIRED	CUSTODIAN	RETENTION	DISPOSITION
CO <sub>2</sub> Weekly	Fire Inspector	3 years	Building Master Plan Folder
CO <sub>2</sub> Monthly	Fire Inspector	3 years	Building Master Plan Folder
CO <sub>2</sub> Yearly	Fire Inspector	3 years	Building Master Plan Folder

9. FORMS

9.1 The following forms are applicable to this document.

APPLICABLE FORMS	
FORM NUMBER	TITLE
SOC 566-E	CO <sub>2</sub> FIRE SUPPRESSION SYSTEM WEEKLY INSPECTION
SOC 567-E	CO <sub>2</sub> FIRE SUPPRESSION SYSTEM MONTHLY INSPECTION
SOC 568-E	CO <sub>2</sub> FIRE SUPPRESSION SYSTEM ANNUAL INSPECTION